November 1, 2011 (14:00 - 17:00)

Workshop on **"Infrared and Raman spectroscopy for monitoring of agricultural food and feed products"** sponsored by FOSS and BRUKER

Chaired by **Pierre DARDENNE and Vincent BAETEN** – Walloon Agricultural Research Centre (CRA–W), Gembloux, Belgium

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The agro-food sector is facing deep and rapid changes. Policy-makers at European and national levels are faced with increasing consumer concerns about food safety and quality issues. These concerns arise in part from previous food safety crises (e.g. dioxin, BSE, melamine) and in part from the health impact of food and feed. Environmental, ethical and animal welfare aspects of agro-food production have also become matters of public concern. Likewise consumers realize that they can make new demands for high quality, healthy and safe food products only if there are methods to assess the compliance to these criteria. The main outcome of these demands is an increased need for appropriate techniques and methods to help producers, retailers and processors to control and to track their products. The agro-food sector is also focused on setting up agricultural production systems that will have a smaller impact on the environment and that will respect specific or traditional practices.

Food safety and quality controls are often performed using reference methods that have limitations. These methods are (i) time-consuming, while the need is for techniques able to give an instantaneous answer; (ii) expensive, while the appropriate safety and quality controls at any crucial step of the food chain require to perform a huge number of analyses; (iii) performed in the laboratory, while the management control has to be at the production level (on-line measurement) or directly at the field level (in-field measurement); (iv) inflexible and single purpose (one method/one parameter), while security and quality control need rapid methods that allow the simultaneous analyses of different compounds; (v) sampling dependent, while the analysis has to be representative of the whole product batch; (vi) not always respectful of the environment (toxic reagents), while the international analytical community looks for minimising the impact of any action on environment or quality of life.

Limitations of reference methods for food safety and quality control have prompted research teams from public centres, universities and private companies to develop new analytical solutions, based on spectroscopic technologies (e.g. fluorescence spectroscopy, near infrared spectroscopy (NIR), mid infrared spectroscopy (MID), Raman spectroscopy). The advantages of spectroscopic techniques are the speed, the ease of use, the reasonable start-up cost, the non-destructiveness and the possibility of on-line or in the field implementation. Spectroscopic methods enable product control at a much higher frequency which will upgrade the food safety and quality control system. The development of robust and flexible spectroscopic instrumentations adapted for on-line/in the field control of the production chain is well suited for the continuous monitoring of processes from raw materials to finished products. Such systems provide real-time analyses with an increased sample throughput. Spectroscopic imaging techniques allow collection of spectroscopic images at single kernel or particle levels. This is of great interest for laboratories that control feed compound or cereals. Other decisive advantages of spectroscopic methods are the ability to determine simultaneously different factors, no use of reagents and reduced sample preparation.

PROGRAM (tentative):

14:00 – 14:40

NIR INFRARED SPECTROSCOPY: 30 YEARS OF EXPERIENCE AT THE SERVICE OF THE FOOD AND FEED SECTORS.

Pierre Dardenne

CRA-W, Gembloux, Belgium

14:40 – 15:10

MOLECULAR SPECTROSCOPIC TECHNIQUES, A TOOL FOR THE DETECTION OF CONTAMINANTS. SAMPLING AND ANALYTICAL CONSIDERATIONS.

Vincent Baeten

CRA-W, Gembloux, Belgium

Pause

15:30 – 16:00

ANALYSIS OF MILK BY NIR, MIR AND RAMAN SPECTROSCOPY: SUCCESS STORIES

Ouissam Abbas

CRA-W, Gembloux, Belgium

16:00 – 16:30

SPEECH/DEMO ON NIR/MIR INSTRUMENTATION AND APPLICATIONS

Foss

16:30 – 17:00

SPEECH/DEMO NIR/MIR/RAMAN INSTRUMENTATION AND APPLICATIONS

Bruker